- Any studies done to determine appropriate buffer widths, along with the conclusions and recommendations drawn from the studies, shall be performed by, or be reviewed and approved by, state and federal wildlife agencies before variances from standard buffer zone widths can be granted.
- The vegetation and permitted uses of the buffer zones need to be tailored to the adjacent habitat it is designed to protect. Natural riparian buffer zones should be maintained, rehabilitated, or reestablished with appropriate native plants (seed material and cuttings locally derived).
- Open space uses such as pasture, low-intensity agricultural activities, and the "rough" or marginal areas of golf courses, may be incorporated into buffer zones when they constitute an improvement in habitat over a previous use or degraded area. However, the potential impacts of construction, cultural, and operational practices (such as grading, number of livestock per acre, lighting, and use of pesticides, herbicides, and fertilizers) need to be thoroughly evaluated and addressed before these uses can be used for buffering.

H. NOISE ELEMENT

Challenges

Noise is generally defined as "unwanted sound," which is a subjective determination of measurable physical phenomena. Ambient noise levels are a major determinant of "quality of life." Noise levels not only affect the utility and enjoyability of property, they affect property values and they affect human health. Scientific studies have repeatedly shown that exposure to elevated noise levels is a subtle stressor, leading to elevated blood pressure as well as permanent loss of hearing sensitivity. Control of noise is an important consideration for the planning process. California Government Code Section 65302(f) requires that general plans contain a Noise Element to identify and quantify potential noise problems and to provide effective policies for noise control and mitigation.

Direction

Sound is measured in decibels (dB). For most purposes, sound is measured in the "A scale," the range of frequencies audible to humans, expressed as dB_A. The decibel scale is logarithmic, which means that for every 5 dB_A increase the perceived level of sound doubles. A 50 percent increase in perceived noise would result in only a 2 or 3 dB_A increase. Depending on its level of intensity, a noise may range from almost inaudible (45 dB_A, the approximate loudness of loud whispering), up to actually painful (140 dB_A, the approximate loudness which can cause physical pain and ear damage).

Forty-five dB_A is usually set as the limit on indoor noise detectable from outdoor sound sources. Sixty dB_A is considered to be the sound level of normal conversation and is often used as a limit on outdoor ambient noise levels for residential areas because it is felt that people should be able to hear conversation in their own back yards. Outdoor ambient noise levels are permitted to be higher for commercial sites, and higher still for industrial areas.

For planning purposes, basic sound data are further manipulated, to reflect the fact that night-time sound is more intrusive. The three common units used to describe and quantify noise for planning purposes are:

L_{eq}, for "Level of equivalent [average] sound," which reflects a 24-hour average of sound measured in dB_A;

L_{dn}, for "Day-Night Average Level," which modifies the L_{eq} by adding a ten percent (10%) weighting factor for sound occurring during night-time hours (between 10 p.m.and 7 a.m.); and

CNEL, for "Community Noise Equivalent Level," which also reflects a 24-hour average of ambient sound but adds only a five percent (5%) weighting factor for both evening (7 to 10 p.m.) and night-time (10 p.m. to 7 a.m.) sound.

CNEL measurements are primarily used for airport noise studies, and L_{dn} units are usually employed for other types of noise studies. The general practice is to identify noise contours around transportation facilities such as airports, rail lines, highways, and major streets, and to identify noise levels at property lines from stationary sources such as industrial equipment.

In the urban environment, noise generators such as transportation corridors and industrial uses occur in close proximity to sensitive noise receivers, such as residential and institutional uses. Some land uses potentially constitute both a noise generator and a simultaneous noise receiver, e.g., recreational sites. The City of Fresno has special noise considerations because it has grown up around two major rail corridors, and many freight trains run through the heart of the city daily. Fresno contains three public airports, and has four state highways running through it, as well as major streets at half-mile and one-mile grid intervals, carrying heavy levels of passenger vehicle and truck traffic. Industrial and public facilities in and around the city also generate noise from processing materials and from the operation of equipment such as large pumps and backup generators. Residential and commercial uses also contribute noise from smaller equipment such as swimming pool pumps and compressors for refrigeration.

Longstanding city policy for stationary sources has been to require enclosure, muffling and/or extra setbacks so that adjacent properties are not exposed to excessive noise levels. Nuisance noise abatement has been accomplished through the city's Noise Ordinance. Noise from transportation facilities has been controlled by distancing sensitive uses from these facilities, and by use of sound-proofing construction measures such as masonry walls and sealed buildings. Title 24 energy conservation requirements (referenced in the Resource Conservation Element/Energy Conservation topic) have also greatly helped mitigate indoor noise levels by requiring dual-pane windows and additional insulation in buildings. Federal Aviation Administration regulations for airports have supported planning and zoning designations which have kept sensitive uses away from the noise attendant upon flight paths.

With the proposed intensification of land uses in the city, noise control will be an increasing consideration for infrastructure and building development projects. The 2025 General Plan maintains the same indoor and outdoor ambient noise limits as the preceding General Plan, but refines noise quantification and control procedures to reflect current planning and sound engineering practice. Specific plans for the three airports in Fresno each have their own noise policies.

Relationship to General Plan Goals

2025 General Plan Goals which relate to noise sources and the control thereof include:

Goal 1: Enhance the quality of life for the citizens of Fresno and plan for the projected population within the moderately expanded Fresno urban boundary in a manner which will respect physical, environmental, fiscal, economic, and social issues.

Goal 14: Protect and improve public health and safety.

H-1. OBJECTIVE: Protect the citizens of the city from the harmful and annoying effects of exposure to excessive noise.

H-1-a. Policy: New noise-sensitive land uses impacted by existing or projected future transportation noise sources shall include mitigation measures so that resulting noise levels do not exceed the standards shown in Table 8 below:

TABLE 8

MAXIMUM ALLOWABLE NOISE EXPOSURE
TRANSPORTATION NOISE SOURCES

Land Use [4]	Outdoor Activity Areas[1] L_{dn} dB	Interior Spaces	
		L_{dn} dB	L_{eq} dB[2]
Residential	60[3]	45	---
Transient Lodging	60[3]	45	---
Hospitals, Nursing Homes	60[3]	45	---
Theaters, Auditoriums, Music Halls	---	---	35
Churches, Meeting Halls	60[3]	---	45
Office Buildings	---	---	45
Schools, Libraries, Museums	---	---	45

[1]Where the location of outdoor activity areas is unknown or is not applicable, the exterior noise level standard shall be applied to the property line of the receiving land use.

[2]As determined for a typical worst-case hour during periods of use.

[3]Noise levels up to 65 dB L_{dn} adjacent to the Burlington Northern Santa Fe and Union Pacific mainline tracks may be allowed by the project approving authority when it is determined that it is not possible to achieve 60 dB L_{dn} in outdoor activity areas using a practical application of the best-available noise reduction technology, and when all feasible exterior noise reduction measures have been proposed.

[4] The Planning and Development Director, on a case-by-case basis, may designate land uses other than those shown in this table to be noise-sensitive, and may require appropriate noise mitigation measures.

H-1-b. Policy: For purposes of city analyses of noise impacts, and for determining appropriate noise mitigation, a significant increase in ambient noise levels is assumed if the project causes ambient noise levels to exceed the following:

- the ambient noise level is less than 60 dB Ldn and the project increases noise levels by 5 dB or more.
- the ambient noise level is 60-65 dB Ldn and the project increases noise levels by 3 dB or more.
- the ambient noise level is greater than 65 dB Ldn and the project increases noise levels by 1.5 dB or more.

H-1-c. Policy: The city shall review new public and private development proposals to determine conformance with the policies of this Noise Element.

H-1-d. Policy: The city shall require an acoustical analysis in those cases where a project potentially threatens to expose existing or proposed noise-sensitive land uses to excessive noise levels. The presumption of potentially excessive noise levels shall be based on the location of new noise-sensitive uses to known noise sources or staff's professional judgement that a potential for adverse noise impacts exists. Acoustical analyses shall be required early in the review process so that noise mitigation may be included in the project design. For development not subject to environmental review, the requirements for an acoustical analysis shall be implemented prior to the issuance of building permits. The requirements for the content of an acoustical analysis are established by the Planning and Development Department in conjunction with environmental health agencies.

H-1-e. Policy: The city shall develop and employ procedures to ensure that noise mitigation measures required pursuant to an acoustical analysis are implemented in the development review and building permit processes.

H-1-f. Policy: The city shall develop and employ procedures to monitor compliance with the policies of the Noise Element after completion of projects where noise mitigation measures have been required.

H-1-g. Policy: The city shall enforce the State Noise Insulation Standards (California Code of Regulations, Title 24) and Chapter 35 of the Uniform Building Code (UBC) concerning interior noise exposure for multi-family housing, hotels and motels.

H-1-h. Policy: The city shall request the California Highway Patrol, the Sheriff's and Police Department to actively enforce the California Vehicle Code sections relating to adequate vehicle mufflers and modified exhaust systems, and sound systems in vehicles.

H-1-i. Policy: The city shall review and update the Noise Element and the Noise Ordinance to ensure that noise exposure information and specific policies and ordinances are consistent with changing conditions within the city and with noise control regulations or policies enacted after the adoption of this element.

H-1-j. Policy: Noise created by new transportation noise sources, including roadway improvement projects, shall be mitigated so that resulting noise levels do not exceed the adopted standards at noise-sensitive land uses.

H-1-k. Policy: New noise-sensitive land uses impacted by stationary noise sources shall include mitigation measures so that resulting noise levels do not exceed the standards show in Table 9 as follows:

TABLE 9

MAXIMUM ALLOWABLE NOISE EXPOSURE-STATIONARY NOISE SOURCES[1]

	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly Equivalent Sound Level (L_{eq}), dB	50	45
Maximum Sound Level (L_{max}), dB	70	65

[1]As determined at outdoor activity areas. Where the location of outdoor activity areas is unknown or not applicable, the noise exposure standard shall be applied at the property line of the receiving land use. When ambient noise levels exceed or equal the levels in this table, mitigation shall only be required to limit noise to the ambient plus five (5) dB.

H-1-1. Policy: Noise created by new proposed stationary noise sources or existing stationary noise sources which undergo modifications that may increase noise levels shall be mitigated so as not to exceed the noise level standards of Table 9 at noise-sensitive land uses.

H-1-m. Policy: As a guideline, noise barriers (walls, earth berms, or berm/wall combinations) shall not exceed 15 feet in height as measured from the elevation of the nearest building pad. The Planning and Development Director, on a case-by-case basis, may allow noise barrier heights differing from this guideline. However, resulting noise levels must satisfy the maximum allowable noise exposure standards.